No. 8300111

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Nickerson American Plant Breeders, Inc.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'Ram'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington this 30th day of August in the year of our Lord one thousand nine hundred and eighty-five.

Attest:

Kenneth B. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

John R. Block
Secretary of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, POULTRY, GRAIN & SEED DIVISION

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

INSTRUCTIONS: *See Reverse.*

FORM APPROVED
OMB NO. 40-R3822

No certificate for plant variety protection may be issued unless a completed application form has been received (5 U.S.C. 553).

1a. TEMPORARY DESIGNATION OF VARIETY	1b. VARIETY NAME	FOR OFFICIAL USE ONLY
HW77-391S4	Ram	PV NUMBER 8300111

2. KIND NAME	3. GENUS AND SPECIES NAME	FILING DATE	TIME
Hard Red Winter Wheat	Triticum aestivum	4/11/83	3:00 P.M.
4. FAMILY NAME (BOTANICAL)	**5. DATE OF DETERMINATION**	**FEE RECEIVED**	**DATE**
Gramineae	1) September 1979 2) September 1981	$ 1,000 $ 500.00	4/11/83 7/16/85

6. NAME OF APPLICANT(S)	7. ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*	8. TELEPHONE AREA CODE AND NUMBER
NICKERSON ~~North~~ American Plant Breeders, Inc.	5201 Johnson Dr., P.O. Box 2955 Mission, KS 66201	913-384-4940 KS 303-532-3721 CO

9. IF THE NAMED APPLICANT IS NOT A PERSON, FORM OF ORGANIZATION: *(Corporation, partnership, association, etc.)*	10. IF INCORPORATED, GIVE STATE AND DATE OF INCORPORATION	11. DATE OF INCORPORATION
Corporation	Delaware, 1-19-83	1-19-83

12. NAME AND MAILING ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS:

~~G. E. Dixon~~ R.E. HEINER
P.O. Box 2955
Mission, KS 66201

~~R.E. Heiner~~ ROBERT F. BRUNS or C. Bruns
P.O. Box 30
Berthoud, CO 80513

13. CHECK BOX BELOW FOR EACH ATTACHMENT SUBMITTED:

- [X] 13A. Exhibit A, Origin and Breeding History of the Variety *(See Section 52 of the Plant Variety Protection Act.)*
- [X] 13B. Exhibit B, Novelty Statement.
- [X] 13C. Exhibit C, Objective Description of the Variety *(Request form from Plant Variety Protection Office.)*
- [X] 13D. Exhibit D, Additional Description of the Variety.
- [X] 13E. Exhibit E, Quality Data and Statistical Data.

14a. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See Section 83(a). (If "Yes," answer 14B and 14C below.)* [X] YES [ ] NO

14b. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?	14c. IF "YES," TO 14B, HOW MANY GENERATIONS OF PRODUCTION BEYOND BREEDER SEED?
[X] YES [ ] NO	[X] FOUNDATION [X] REGISTERED [X] CERTIFIED

15a. DID THE APPLICANT(S) FILE FOR PROTECTION OF THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

15b. HAVE RIGHTS BEEN GRANTED THIS VARIETY IN OTHER COUNTRIES? [ ] YES [X] NO *(If "Yes," give name of countries and dates.)*

16. DOES THE APPLICANT(S) AGREE TO THE PUBLICATION OF HIS/HER (THEIR) NAME(S) AND ADDRESS IN THE OFFICIAL JOURNAL? [X] YES [ ] NO

17. The applicant(s) declare(s) that a viable sample of basic seed of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

March 25, 1983 (DATE) — Robert E Heiner (SIGNATURE OF APPLICANT)

March 28, 1983 (DATE) — (SIGNATURE OF APPLICANT)

FORM GR-470 (1-78)

RECEIVED MAR 2 8 1983

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Exhibit A

Origin and Breeding History of Ram

PEDIGREE: II18889/Trapper//CO652643/3/Baca

DATE OF CROSS: 1973

HISTORY: The breeding history of Ram started in 1973 with the cross of CO701411 (F_6) and Baca. This F_1 was increased in 1974, and grown as an F_2 population in 1975. Single rows of F_3 lines were grown in 1976 at three locations. One of these lines was advanced into regional yield trials in 1977. In 1979, head-rows were grown at Berthoud, Colorado. One of these rows was distinctly taller than the majority and was harvested separately and given the designation HW77-391S4. Ram was put into regional yield testing in 1981 and breeders seed increases were initiated. Approximately 1370 units of foundation seed were produced in 1982.

Ram is uniform and stable. Less than 1% of the plants have been rogued from registered fields in 1982. Approximately 90% of these rogued plants have been three to fourteen centimeters taller than Ram. Less than 1% of these taller plants may be encountered in subsequent generations.

Exhibit B

Novelty Statement

Ram is most similar to the hard red winter wheat, Hawk. However, it can be distinguished on the following morphological characteristics:

- Ram and Hawk differ significantly in glume width; Ram's are narrower (see supporting statistical data, Exhibit E).

- Ram and Hawk differ significantly in height; Ram is taller (see supporting statistical data, Exhibit E).

- Ram has a brown phenol reaction, color category #4. Hawk displays 80% light brown (#3) phenol reaction and 20% brown (#4) phenol reaction.

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Anova Table for Height

Ram versus Hawk

Source	df	ss	ms
Total	39	9629.5	
Rep	19	8875.5	467.1
VAR	1	562.5	562.5**
Error	19	191.5	10.1

F test (.05) = 55.7**

** There is a significant difference at the 5% and 1% levels.

variety	mean (cm)
Hawk	75.5
Ram	83.0

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Anova Table for Glume Width

Ram versus Hawk

Source	df	ss	ms
Total	49	2.960	
VAR	1	1.312	1.312**
Error (Res)	48	1.648	.034

F test = 38.59**

** The difference in glume width between Hawk and Ram is significant at the 5% and 1% levels.

variety	mean (mm)
Hawk	3.45
Ram	3.12

Ram

FORM APPROVED. OMB NO. 40-R3712

FORM GR-470-6
(2-15-73)

UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
GRAIN DIVISION
HYATTSVILLE, MARYLAND 20782

EXHIBIT C
(Wheat)

OBJECTIVE DESCRIPTION OF VARIETY
WHEAT *(TRITICUM SPP.)*

INSTRUCTIONS: *See Reverse.*

NAME OF APPLICANT(S)
NICKERSON
~~North~~ American Plant Breeders, Inc.

ADDRESS *(Street and No. or R.F.D. No., City, State, and ZIP Code)*
5201 Johnson Dr., P.O. Box 2955
Mission, KS 66201

FOR OFFICIAL USE ONLY
PVPO NUMBER 8300111
VARIETY NAME OR TEMPORARY DESIGNATION
RAM

Place the appropriate number that describes the varietal character of this variety in the boxes below.
Place a zero in first box (e.g. [0][8][9] or [0][9]) when number is either 99 or less or 9 or less.

1. KIND:

[1] 1 = COMMON 2 = DURUM 3 = EMMER 4 = SPELT 5 = POLISH 6 = POULARD 7 = CLUB

2. TYPE:

[2] 1 = SPRING 2 = WINTER 3 = OTHER *(Specify)* _____ [2] 1 = SOFT 2 = HARD 3 = OTHER *(Specify)* _____

[2] 1 = WHITE 2 = RED 3 = OTHER *(Specify)* _____

3. SEASON - NUMBER OF DAYS FROM [redacted] TO:

[2][3][7] FIRST FLOWERING planting [2][4][5] LAST FLOWERING

4. MATURITY *(50% Flowering)*:

[-][-] NO. OF DAYS *EARLIER* THAN ..... [-] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][3] NO. OF DAYS *LATER* THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

5. PLANT HEIGHT *(From soil level to top of head)*:

[0][9][9] CM. HIGH

[-][-] CM. TALLER THAN ..... [-] 1 = ARTHUR 2 = SCOUT 3 = CHRIS

[0][6] CM. SHORTER THAN ..... [2] 4 = LEMHI 5 = NUGAINES 6 = LEEDS

6. PLANT COLOR AT BOOTING *(See reverse)*:

[2] 1 = YELLOW GREEN 2 = GREEN 3 = BLUE GREEN

7. ANTHER COLOR:

[1] 1 = YELLOW 2 = PURPLE

8. STEM:

[1] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom: 1 = ABSENT 2 = PRESENT

[2] Hairiness of last internode of rachis: 1 = ABSENT 2 = PRESENT

[1] Internodes: 1 = HOLLOW 2 = SOLID

[0][4] NO. OF NODES *(Originating from node above ground)*

[2][9] CM. INTERNODE LENGTH BETWEEN FLAG LEAF AND LEAF BELOW

9. AURICLES:

[2] Anthocyanin: 1 = ABSENT 2 = PRESENT

[2] Hairiness: 1 = ABSENT 2 = PRESENT

10. LEAF:

[1] Flag leaf at booting stage: 1 = ERECT 2 = RECURVED 3 = OTHER *(Specify)*: _____

[2] Flag leaf: 1 = NOT TWISTED 2 = TWISTED

[1] Hairs of first leaf sheath: 1 = ABSENT 2 = PRESENT

[2] Waxy bloom of flag leaf sheath: 1 = ABSENT 2 = PRESENT

[1][2] MM. LEAF WIDTH *(First leaf below flag leaf)*

[2][1] CM. LEAF LENGTH *(First leaf below flag leaf)*:

Ram

8300111

FORM GR-470-6 (REVERSE)

11. HEAD:

[3] Density: 1 = LAX 2 = DENSE 3=middense ave. 40.4

[1] Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE 4 = OTHER (Specify) _____

[4] Awnedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

[1] Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED 5 = BROWN 6 = BLACK 7 = OTHER (Specify): _____

[6.6] CM. LENGTH

[1 1] MM. WIDTH

12. GLUMES AT MATURITY:

[2] Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.) 3 = LONG (CA. 9 mm.)

[1] Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.) 3 = WIDE (CA. 4 mm.)

[3] Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED 4 = SQUARE 5 = ELEVATED 6 = APICULATE

[3] Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE (average 6.78 mm)

13. COLEOPTILE COLOR:

[1] 1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

[2] 1 = ABSENT 2 = PRESENT (slight)

15. JUVENILE PLANT GROWTH HABIT:

[2] 1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

[3] Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

[1] Cheek: 1 = ROUNDED 2 = ANGULAR

[2] Brush: 1 = SHORT 2 = midlong 3 = LONG

[1] Brush: 1 = NOT COLLARED 2 = COLLARED

[4] Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN 4 = BROWN 5 = BLACK

[3] Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

[6.6] MM. LENGTH

[3.3] MM. WIDTH

[4 5] GM. PER 1000 SEEDS

17. SEED CREASE:

[1] Width: 1 = 60% OR LESS OF KERNEL 'WINOKA' 2 = 80% OR LESS OF KERNEL 'CHRIS' 3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

[1] Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT' 2 = 35% OR LESS OF KERNEL 'CHRIS' 3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3) moderate susceptible 4) moderate resistant

[4] STEM RUST (Races) field mixture of 15TNM, 15IQFB

[4] LEAF RUST (Races) field

[0] STRIPE RUST (Races) _____

[0] LOOSE SMUT

[0] POWDERY MILDEW

[0] BUNT

[2] OTHER (Specify) soil borne mosaic virus

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant) 3) moderate susceptible 4) moderate resistant

[0] SAWFLY

[0] APHID (Bydv.)

[1] GREEN BUG

[0] CEREAL LEAF BEETLE

[0] OTHER (Specify) _____

HESSIAN FLY RACES: [1] GP [1] A [1] B [1] C [1] D [1] E [1] F [1] G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	Hawk	Seed size	Hawk
Leaf size	Hawk	Seed shape	Hawk
Leaf color	Hawk	Coleoptile elongation	Hawk
Leaf carriage	Hawk	Seedling pigmentation	Hawk

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:

(a) L.W. Briggle and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.

(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

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Exhibit D

Additional Description

Ram is a hard red winter wheat tested as HW77-391S4. It was developed by North American Plant Breeders.

Ram is an intermediate to tall height semidwarf variety with good straw strength, intermediate to late maturity and good winterhardiness. Milling and baking properties are acceptable.

Juvenile plant growth habit is semi-erect. Plant color at boot is green with an erect, twisted flag leaf. Head shape is tapering to strap, middense, awned and head color is white at maturity. Glumes are of medium length and narrow width with rounded to square shoulders and acuminate beaks; seed shape is elliptical. Seed crease is narrow and depth is shallow.

Ram is adapted to the panhandles of Oklahoma, Texas and Nebraska, western Kansas and eastern Colorado.

North American Plant Breeders

YEAR: 1982

HARD RED WINTER WHEAT QUALITY

			WHEAT--FLOUR QUALITY						BAKING QUALITY									
YEAR	SAMPLE NAME	LOC	TEST WT.	WHT PROT	FLR YLD	FLR PROT	FLR ASH	MIX CURVE	ABS.	MIX TIME	DOUGH CHAR	LOAF VOL	CRUMB GRN	CRUMB TEX	CRUMB COL	MILL SCORE	BAKE SCORE	TOTAL SCORE
			lb/Bu	14%mb	%	14%mb	14%mb	R	%	min	R	cc	R	R	R			
80	HW77-39154	CK	59.3	11.7	71.9	10.4	0.393	6	59.0	6.0	8	980	6	7	9	72-C	73-C	145-C
81	HW77-39154	SO	58.6	12.0	67.8	11.5	0.434	6	60.0	4.5	8	775	8	8	8	71-C	75-C	146-C
81	HW77-39154	LK	53.7	12.8	70.6	11.6	0.474	6	59.0	4.5	8	890	8	7	9	69-D	77-C	146-C
81	HW77-39154	HN	58.1	12.5	70.8	11.3	0.377	5	58.0	4.0	8	870	9	8	8	73-C	77-C	150-C
81	HW77-39154	BR	59.9	11.2	72.1	10.7	0.404	4	57.0	3.5	8	810	8	6	7	69-D	68-D	137-D
82	HW77-39154	CK	51.1	13.9	69.6	12.3	0.000	6	61.0	5.5	9	850	7	8	9	71-C	78-C	149-C
RAM	AVERAGE		56.8	12.4	70.5	11.3	0.347	6	59.0	4.7	8	863	8	7	8	70-C	76-C	146-C
80	NEWTON	CK	59.8	12.3	70.9	11.3	0.456	8	62.0	5.0	8	895	7	7	9	81-B	80-B	161-B
81	NEWTON	SO	61.8	11.9	68.5	11.1	0.400	7	61.0	3.5	9	790	8	8	9	75-C	80-B	155-C
81	NEWTON	LK	56.8	13.5	69.8	12.3	0.449	7	62.0	3.0	9	1000+	8	9	9	78-C	90-A	168-B
81	NEWTON	HN	59.9	11.5	70.4	10.5	0.339	6	59.0	3.5	8	875	8	8	9	72-C	78-C	150-C
81	NEWTON	BR	62.0	12.5	73.4	12.0	0.386	5	63.0	2.0	8	810	7	8	9	83-B	77-C	160-B
82	NEWTON	CK	56.2	11.5	70.3	10.1	0.397	5	60.0	4.3	9	830	8	9	9	63-D	81-B	144-C
	AVERAGE		59.4	12.2	70.6	11.2	0.405	6	61.2	3.6	9	875	8	8	9	76-C	83-B	159-C

GRADES: A-EXCELLENT B-GOOD C-ACCEPTABLE D-QUESTIONABLE F-UNACCEPTABLE
R=RATINGS: 9-10=EXCELLENT 8=GOOD 7=ACCEPTABLE 5-6=QUESTIONABLE 1-4=UNACCEPTABLE

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